

## Introduction to Applied Design, Skills, and Technologies

The ability to design and make, acquire skills as needed, and apply technologies is important in the world today and a key aspect of educating citizens for the future.

The new and redesigned Applied Design, Skills, and Technologies (ADST) curriculum is an experiential, hands-on program of learning through design and creation that includes skills and concepts from traditional and Aboriginal practice; from the existing disciplines of Business Education, Home Economics, Information Technology, and Technology Education; and from new and emerging fields. It envisions a K-12 continuum fostering the development of the skills and knowledge that will allow students to create practical and innovative responses to everyday needs and problems.

### Features of the ADST curriculum

- There is a renewed focus on designing and making, the acquisition of skills, and the application of technologies.
- The ADST curriculum is now a provincial curriculum for K-12 that can be delivered in different ways at different grade levels.
- There is a common set of curricular competencies for all of the ADST (formerly Applied Skills) curricula – Business Education, Home Economics, Information Technology, Media Arts, and Technology Education – that can also be used as a template for locally developed options now and in the future.

### Design of the ADST curriculum

#### Big Ideas

The Big Ideas of the ADST curriculum are derived from the Curricular Competencies. The Big Ideas are intended to capture a progression of learning in applying design processes, skills, and technologies.

	K-3	4-5	6-8	9-10
Applied Design	Designs grow out of natural curiosity.	Designs can be improved with prototyping and testing.	Design can be responsive to identified needs.	Social, ethical, and sustainability considerations impact design.
Applied Skills	Skills can be developed through play.	Skills are developed through practice, effort, and action.	Complex tasks require the acquisition of additional skills.	Complex tasks require the sequencing of skills.
Applied Technologies	Technologies are tools that extend human capabilities.	The choice of technology and tools depends on the task.	Complex tasks may require multiple tools and technologies.	Complex tasks require different technologies and tools at different stages.

### Curricular Competencies

The Curricular Competencies are organized under three headings:

- Applied Design
- Applied Skills
- Applied Technologies

The Curricular Competencies under Applied Design are further organized under subheadings that reflect general stages of designing and making. For Grades 4 to 12, these are:

- Understanding context
- Defining
- Ideating
- Prototyping
- Testing
- Making
- Sharing

Elaborations for the Curricular Competencies provide definitions for clarity.

The subheadings for K-3 are simplified in order to be developmentally appropriate; for example, young children do not prototype, test, and make as discernibly separate stages when they are designing and making through exploratory and purposeful play. The three stages of Applied Design that are identified for Kindergarten to Grade 3 encompass all of the stages of designing and making that are identified at higher grade levels, but in a naturalistic and developmentally appropriate way. They are:

- Ideating
- Making
- Sharing

An important feature of the ADST curriculum is that the Curricular Competencies do not change for every grade. They remain the same for K-3, and then there is a set for 4-5, 6-8, 9-10, and 11-12. Even then, the changes are quite incremental. This aspect of the curricular design is intended to provide a consistent focus for both students and teachers on the “doing” aspect of the curriculum and to encourage student metacognition.

Students use and develop the core competencies of creative and critical thinking, communication, and the personal and social competencies through the Curricular Competencies of ADST. The following chart gives some examples, but is not an exhaustive list.

	<b>K-3</b>	<b>4-5</b>	<b>6-8</b>	<b>9-10</b>
<b>Thinking</b>	Generate ideas from their experiences and interests Add to others' ideas	Generate potential ideas Add to others' ideas Screen ideas against the objective and constraints	Generate potential ideas Add to others' ideas Screen ideas against criteria and constraints	Take risks in generating ideas Add to others' ideas in ways that enhance them Screen ideas against criteria and constraints

<b>Communication</b>	<p>Tell the story of designing and making their product</p> <p>Reflect on their ability to work effectively both as individuals and collaboratively in a group</p>	<p>Explain their process</p> <p>Reflect on their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain a co-operative work space</p>	<p>Explain their process, using appropriate terminology, and provide reasons for selected solutions and modifications</p> <p>Evaluate their ability to work effectively both as individuals and collaboratively in a group, including the ability to share and maintain an efficient co-operative work space</p>	<p>Provide a rationale for the selected solution, modifications, and procedures, using appropriate terminology</p> <p>Evaluate their ability to work effectively both as individuals and collaboratively in a group, including the ability to share and maintain an efficient co-operative work space</p>
<b>Personal and Social</b>	<p>Identify how their product contributes to the individual, family, community, and/or environment</p>	<p>Identify how their product contributes to the individual, family, community, and/or environment</p>	<p>Evaluate personal, social, and environmental impacts and ethical considerations</p> <p>Identify personal, social, and environmental impacts of the use of technology</p>	<p>Critically analyze and prioritize competing factors, including social, ethical, and sustainability considerations, to meet community needs for preferred futures</p> <p>Identify how technology use can differ depending on culture, economics, access to resources, and social expectations</p>

### Content

The ADST curriculum does not specify any Content learning standards for Kindergarten through Grade 5. The intent is that teachers use the Curricular Competencies from ADST K-5 with grade-level content from other areas of learning to provide students with cross-curricular opportunities to develop foundational mindsets and skills in design thinking and making. For example, students might design and build something based on the Content learning standards in the Science or Social Studies curriculum.

For Grades 6 to 12, the Content is concept-based and includes learning standards for the four existing Applied Skills disciplines (Business Education, Home Economics, Information Technology, and Technology Education) and for new and emerging fields such as Media Arts.

Content learning standards are stated as topics. This creates the space for students to personalize their learning by making choices about what they design and make and the depth and breadth of their learning on a particular topic based on their own interests and passions.

The generality of the Content learning standards also facilitates inclusion by allowing the teacher or the student to adjust depth and breadth to match abilities.

Grades 6 to 9 are intended as exploration years. For Grades 6 and 7, this is a new provincial curriculum; for Grades 8 and 9, it is a redesigned curriculum.

The curriculum provides one set of Content options for Grades 6 and 7 that are intended to be short modules that may be offered in rotation. Over the two years, students may be exposed to several of these and perhaps other locally developed options that also use the Curricular Competencies of ADST with locally developed content. This approach provides provincial recognition of the variety and scope of existing locally developed middle years programs and a template for the development of additional local programs.

There are separate sets of Content options for Grade 8 and Grade 9. These may be offered as modular rotations of varying length, as is common for Grade 8 now, or as full-year courses, as is often the case in Grade 9 now. The Content elaborations are non-mandatory curricular supports that suggest possible depth and breadth for teaching concepts.

## **Considerations for delivering ADST**

### **At all grade levels**

- The focus on hands-on designing and making, acquisition and honing of skills, and choosing and applying technologies requires a high degree of student choice, although there may still be a place for common activities for specific purposes — for example, to introduce new skills or equipment, to communicate safety procedures, or to explicitly focus on one aspect of the design process.
- The curriculum is inclusive of modern and traditional Aboriginal design, skills, and technologies. Students should have opportunities to learn from local First Peoples. This will require an understanding by both students and teachers of issues of appropriation, and that some knowledge is considered sacred.

### **Kindergarten to Grade 5**

- Students can be given opportunities to develop foundational skills in ADST through exploratory and purposeful play, and through designing and making activities related to the content in other areas of learning. This is already a normal practice in K-5 classrooms and will not require additional time or resources.
- A single set of Curricular Competencies for K-3 provides common language and continuity for the first four years.
- Another set of Curricular Competencies for Grades 4 and 5 with more stages delineated for Applied Design encourages students to take a more purposeful approach to designing and making.

### **Grades 6 and 7**

- The curriculum is designed to be modular to allow for choice and a variety of delivery models depending on school configuration and student interest.
- The requirement will be that students experience a minimum of three modules of ADST in each of Grades 6 and 7. Schools may choose from among the modules provided in the provincial curriculum or develop new modules that use the Curricular Competencies of

ADST 6-7 with locally developed content. Locally developed modules can be offered in addition to, or instead of, the modules in the provincial curriculum.

- Schools that currently have an exploratory rotation may choose to continue with that delivery model for ADST. Schools that do not currently have an exploratory rotation may wish to develop one, or to teach ADST modules in an integrated cross-curricular way with other areas of learning.

### **Grades 8 and 9**

- Schools will be able to accommodate the redesigned ADST curriculum within their current delivery models.
- The curriculum may be offered as modular rotations of varying length, as is common for Grade 8 now, or as full courses, as is often the case in Grade 9 now.
- There are more Content learning standards for Grade 9, as schools often offer these as full courses.
- Schools are expected to offer students the equivalent of a “full-year” program in ADST. This can be made up of one or more modules.
- Schools may choose from among the modules provided in the provincial curriculum or develop new modules that use the Curricular Competencies of ADST 8 or 9 with locally developed content. Locally developed modules can be offered in addition to, or instead of, the modules in the provincial curriculum.
- As the new ADST curriculum has explorations starting in Grade 6, schools may wish to offer students more choice in Grades 8 and 9 than was offered previously.